

**REMARKS**

Claims 1–14 are pending in this application. Non-elected claims 6–13 have been withdrawn from consideration by the Examiner. By this Amendment, claims 1, 3–6, and 13 are amended. Support for the amendments to the claims may be found, for example, in the original claims. No new matter is added.

In view of the foregoing amendments and following remarks, reconsideration and allowance are respectfully requested.

**I. Rejection under 35 U.S.C. §112, Second Paragraph**

The Office Action rejects claim 1 under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 1 is amended to recite that " $x > 0$ ." Accordingly, reconsideration and withdrawal of the rejection are respectfully requested.

**II. Rejections Under 35 U.S.C. §103**

**A. Lampe-Onnerud**

The Office Action rejects claims 1 and 14 under 35 U.S.C. §103(a) as obvious over U.S. Patent Application Publication No. 2002/0192552 to Lampe-Onnerud et al. ("Lampe-Onnerud"). Applicants respectfully traverse the rejection.

The specification describes the unexpected results obtained from the positive electrode material according to claim 1. For example, the specification discloses that using the proper amount of Al increases the rate of Li ion diffusion in a Li-Ni-Co-Ba-O system crystal, and prevents decomposition of the crystal structure under high temperatures. "Therefore, use of material containing Al in a positive electrode allows improvement of the power output performance, rate performance, high temperature storage performance, and cycle performance of a lithium secondary battery." See specification, page 7, line 21 to page 8, line 4. The specification also discloses that when Ba is present in an amount of 0.0005 to

0.01 mol, the thermal stability of the composition is improved. *See* specification, page 10, lines 5–7.

Such properties are unexpected from the disclosures of Lampe-Onnerud. Lampe-Onnerud fails to specifically describe the compound of claim 1 because Lampe-Onnerud does not specifically describe composite oxides that contain Al. Furthermore, Lampe-Onnerud does not discuss the benefits of using Al in a Li-Ni-Co-Ba-O system crystal. Instead, Lampe-Onnerud focuses on the feature that the Co/Ni ratio of the coating material is greater than that of the core material. *See, e.g.*, abstract. This creates a gradient of diminishing Ni concentration from the core to the surface of each particle, which produces a diffraction pattern that has asymmetric Bragg reflection peaks when subjected to X-ray diffraction, showing that the material has a gradually changing elemental composition. *See* paragraph [0058]. Lampe-Onnerud further discloses that this feature where the Co/Ni ratio of the coat material is greater than that of the core material produces a material that is safer, has a higher capacity, and demonstrates higher cyclability, than found in LiCoO<sub>2</sub> systems. *See, e.g.*, paragraphs [0059] and [0060]. There is nothing in these disclosures that would have led one of skill in the art to the composition of claim 1.

Lampe-Onnerud would not have rendered obvious claim 1. Claim 14 depends from claim 1 and, thus, also would not have been rendered obvious by Lampe-Onnerud. Accordingly, reconsideration and withdrawal of the rejection are respectfully requested.

**B. Lampe-Onnerud in view of Lee**

The Office Action rejects claims 2–5 under 35 U.S.C. §103(a) over Lampe-Onnerud in view of U.S. Patent Application Publication No. 2004/0076884 to Lee et al. ("Lee"). Applicants respectfully traverse the rejection.

The Office Action concedes that Lampe-Onnerud fails to disclose an amorphous material as required by claims 2–5. The Office Action asserts that Lee discloses coating a

cathode material with  $\text{Al}_2\text{O}_3$ , and further asserts that it would have been obvious for one of ordinary skill in the art to substitute the coating disclosed by Lampe-Onnerud with the coating disclosed by Lee for the benefit of increasing the voltage and the capacity of the battery. *See* Office Action, page 5.

As discussed above, the composition of claim 1 would not have been obvious from the disclosure of Lampe-Onnerud. Lee fails to remedy the deficiencies of Lampe-Onnerud. Lampe-Onnerud and Lee, considered separately or combined, would not have rendered obvious the composition of claim 1.

Furthermore, there is no motivation to combine the two references. Lee is directed to  $\text{LiCoO}_2$  cathode materials, whereas Lampe-Onnerud is directed to  $\text{LiNiO}_2$  materials. Lampe-Onnerud discusses the differences between the two types of materials, including that  $\text{LiNiO}_2$  materials are less safe than  $\text{LiCoO}_2$  materials. *See, e.g.*, paragraph [0003]. As discussed above, one of the key features taught by Lampe-Onnerud is that the Co/Ni ratio of the coating material is greater than that of the core material, creating a gradient of diminishing Ni concentration from the core to the surface of each particle, giving a material that is safer, has a higher capacity, and demonstrates higher cyclability, than found in  $\text{LiCoO}_2$  systems. Substituting the coating material of Lampe-Onnerud with the coating material of Lee would not create this gradient disclosed by Lampe-Onnerud (as there would be no Ni or Co in the coating). There is not teaching or suggestion in either reference that such a modification would produce the results Lampe-Onnerud was seeking to achieve and, in fact, the entire disclosure of Lampe-Onnerud indicates that the coating composition was critical to achieving the desired results. It is well-established that if the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. *In re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959).

For at least the reasons discussed above, claim 2-5 would not have been rendered obvious by Lampe-Onnerud and Lee. Accordingly, reconsideration and withdrawal of the rejection are respectfully requested.

**III. Conclusion**

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of the application are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,



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